Topic: Effects of Ionospheric-Magnetospheric Plasma Redistribution on Storms

Project Title:
Ionospheric Plasma Outflow Scaling Laws as a Function of Solar Cycle

PI Name: Robert Strangeway
PI Email: strange@igpp.ucla.edu
Affiliation: University of California, Los Angeles
Project Information:
The polar and auroral ionosphere are a signficant source of plasma for the magnetosphere. This plasma can be source for the plasmasheet and ring current, and can also affect the dynamical response of the magnetosphere through mass loading of the tail lobes and plasmasheet. Thus understanding the variability of ionospheric outflows is essential in specifying the response of the magnetosphere to changes in the solar wind drivers. We have recently derived scaling laws that specify ionospheric outflow fluxes as a function of electromagnetic and electron energy fluxes to the polar and auroral ionosphere. These scaling laws were determined from a 3-day interval of data from the Fast Auroral Snapshot Small Explorer. We will extend the scaling laws to the full solar cycle, and further use computer simulations such as those provided by NASA's Community Coordinated Modeling Center (CCMC) to investigate the impact of solar illumination on the flux of ionospheric plasma that flows into the magnetosphere.

ROSES ID: NNH06ZDA001N
Duration:
Selection Year: 2007
Program Element: Focused Science Topic

Citations: